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AUTHOR Okey, Robert M.
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ABSTRACT

Lockheed Martin Corporation, which is comprised of approximately 72 operating units (some 200,000 employees) worldwide, has set up an intranet called the Lockheed Martin Network. On the network, the corporation released a set of corporate policies via web pages which must be implemented by each of its companies. Because each company varied on what policies they required, individual companies produced their own web pages of policies, which has lead to a problem of deciding which corporate policies need to be implemented in a company policy and which can be adopted as-is without being re-written. This paper first compared 110 corporate policies to company level policies to determine if there was any duplication of effort. In addition, other types of information being published on company web pages were examined, including organizational charts, newsletters, user-manuals, and directories. Forty of the 110 corporate policies were recommended to be used by the companies as-is. Statistics concerning these materials were presented to determine the most common types of information available, and to show the variety and possibilities of information dissemination. The most common type of information, besides policies, was found to be products and services, while the least common was library services. The study concluded that the benefits of timely and accurate information dissemination have been achieved through the Lockheed Martin Network. Appendices include three tables with data on policy content, policy recommendations, and company web information. (Contains 35 references.) (Author/AEF)

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The Lockheed Martin Network: An Intranet Analysis

A Master's Research Paper submitted to the
Kent State University School of Library and
Information Science in partial fulfillment of the
requirements for the degree Master of Library Science

by

Robert M. Okey

April, 1997

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Master's Research Paper by

Robert M. Okey

B.S., University of Akron, 1991

M.L.S., Kent State University, 1997

Approved by

Adviser [signature] Date 4/11/97

ABSTRACT

This study was an examination of company policies and procedures as well as a content analysis of business related information available on the Lockheed Martin Network. The Lockheed Martin Corporation set up this intranet to provide timely and accurate information to its 200,000 employees worldwide. Corporate policies and procedures have been published for use by company level operating units. In this paper, corporate policies were compared to company level policies to determine if there was any duplication of effort. Forty of the 110 corporate policies were recommended to be used by the companies as-is. This intranet was approximately one and a half years old, but is growing at an astonishing rate. An analysis of what information was available and where it was found was used to benefit all employees. Commonly distributed information in companies, such as organization charts, company newsletters, products and services information, and phone directories was analyzed and ranked from most common to least common. The most common type of information found, besides policies, was products and services, while the least common was library services.

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Chapter I
INTRODUCTION

The need to share information electronically has been recognized by the business community for years, yet only recently are companies learning how to exploit the power of electronic communications. The term Internet, which was first used in 1982 to refer to the enormous collection of inter-connected networks that use TCP/IP protocols (SurfCONTROL, 1996), has presented itself as a useful tool whereby corporations can disseminate company information. Because of security and proprietary information concerns, the Internet is being used with software programs known as "fire walls" to allow only employees access to company material. This development has lead to the term "Intranet", meaning a company world wide web technology based network protected by fire walls. These networks employ the same types of browser, network, and graphics software used to access the world wide web (Cortese, 1996). This implementation delivers company information of a corporation to each employee desktop with minimal cost, time and effort (SurfCONTROL, 1996).

According to Bill Gates, "over the next 12 or 18 months the real pay-back to the typical business will come from using intranet web sites to give employees the information they need to be more effective" (Gates, 1996). While 1995 was clearly the "Year of the Internet," 1996 is being dubbed the "Year of the Intranet." Forrester Research interviewed 50 Fortune 500 companies and found that fully two-thirds already have or are considering some involvement with Intranet applications. International Data Corporation (IDC) reported that even in 1995, sales of web servers for Intranet use surpassed those sold for Internet use by ten percent. Also, IDC reported that by the year 2000, server licenses for intranet usage will outsell Internet usage ten to

one (Levitt, 1996). Zone Research Inc., in Redwood City, California, predicted software sales of intranet servers will be four billion dollars in 1997, up from 476 million dollars last year (Cortese, 1996).

Intranets are sprouting up all across the United States and the intranet market is expected to double the Internet by 1999 (Sweat, 1996). Six of ten financial corporations recently polled are in the process of setting up intranets. Eight of ten are providing Internet access to their employees, according to a poll of 334 treasury executives. Of those polled, 61 percent said they already have an intranet in place or are beginning to construct one. Seventy-eight percent of these companies have provided their employees with Internet access, up 20 percent from last year (Sweat, 1996a). The Business Research Group, in Newton, Mass., reports that 23 percent of the decision-makers at 169 medium-size and large companies already have plans to implement an intranet (Carr, 1996).

Intranets are helping solve some age-old problems: multiplatform support for text and complex graphics; data distribution across the country or around the world; paper glut; timely distribution of reports; and information gathering with employees (SurfCONTROL, 1996). With so many computer platforms being used, like VAX, UNIX, Windows, and Macintosh, a solution to electronic communications within a business needed to be found. Web technology based intranets have offered a solution to this problem. Due to corporate mergers, management is discovering that not only do multiplatform problems exist, but also the distribution of information to their many employees around the world is costly and time consuming. By the time an employee receives the information, it may be out of date. In addition, information gathering has become a complex task in large companies. With Intranets, online forms can be filled out by

employees no matter where they are in the world. This allows a quick way to collect information and produce reports.

The bulk of corporate intranet use has been driven by individual departments, such as human resources and marketing (Wilder, 1996). Typically these departments produce volumes of paper manuals. Policies and procedures, organization charts, functional manuals and advertising all are easily disseminated on an Intranet. Departments producing these types of web pages can keep employees up to date without distributing paper copies and maintaining databases of employee distribution lists.

Need For The Study

Lockheed Martin Corporation, which is comprised of approximately 72 operating units worldwide, has set up an intranet called the Lockheed Martin Network. Before the intranet, when the corporate policies and procedures group went looking for an infrastructure to support the distribution of its manuals, they went to a division of the corporation (Enterprise Information Systems EIS) for advice. At the time, some employees were using the internal web independently, and EIS was investigating the possibilities of an intranet as a common medium across the company; however, no initiative had been identified to drive the project. The policies and procedures group was responsible for defining the business need and requirements and then bringing the need to EIS for development.

On the network, the corporation released a set of corporate policies via web pages which must be implemented by each of its companies. Because each company varied on what policies

they required, individual companies produced their own web pages of policies. This has lead to a problem of deciding which corporate policies need to be implemented in a company policy and which corporate polices can be adopted as-is without being re-written. In addition, since the Lockheed Martin Network is roughly one and a half years old, employees have had trouble keeping up with the growing volume of information that is available on the network. An examination of available material and statistics concerning this material would benefit all employees.

Purpose Of The Study

The purpose of this study was to analyze the Lockheed Martin Network and then present and discuss statistics on what types of information was available to the employees. This paper first attempted to identify the duplication of corporate policies at the company level. For example, not every company needed to publish a sexual harassment policy since the corporate policy on this subject should be sufficient. A determination of which policies could have been adopted, and which policies needed their own company interpretation was made. In addition, this paper examined other types of information being published on company web pages, including organization charts, newsletters, user-manuals, and directories. Statistics concerning these materials were presented to determine the most common types of information available, and to show the variety and possibilities of information dissemination. Recommendations were made available to and have benefited the Akron employees at Lockheed Martin Tactical Defense Systems. These statistics also provided an understanding of information that is commonly

presented on web pages by discussing format and viewing of the materials. The paper also discussed a few points concerning what is available on the corporate web pages.

Limitations Of The Study

Information on the Lockheed Martin Intranet is proprietary to the corporation and therefore was only discussed in generalities. Content specifics were not included. Only an overall look at what the network was used for, where information was located, and recommendations were discussed. This study included companies who already had a presence on the Lockheed Martin Network as of December 2, 1996. Companies who had partial sets of policies on the network were not included in the presented statistics. Determining if complete sets were available was not always possible since intranets are always growing. Some company policies may not have been published on the network because of sensitive information concerns. This could not be controlled and may have altered the results.

Because network access was limited to some sites at certain times of the day, the examination was based on random availability. In addition, because the title of a policy was the only examined information, interpretation by the researcher did occur. For example, a corporate policy titled Drug-Free Workplace may have been interpreted as covering the same information as a company policy titled Substance Abuse. The recommendations were solely based on review and examination of available policy titles.

Definitions Of Terms

Browser- A software tool used to view web pages, graphics, and other web technology based information. For this study, Netscape Navigator will be the browser used.

Company- The third level operating unit of the Lockheed Martin Corporation.

Corporation- The highest operating level of the Lockheed Martin Corporation.

Fire wall- A software package used to allow only company employees or designated visitors access to an internal network.

GIF- Graphic Interchange Format or a type of graphic format recognizable by most web browser software.

Home page- The initial page of an organization or individual from where you begin to browse their collection of information.

HTML- Hypertext Markup Language or a set of text coding elements that are recognizable by web browser software.

Hyperlink- As used in this paper, a HTML formatted text that allows the user to move to from one web page or section of a web page to another.

Internet- An internationally linked network of networks used by Universities, businesses, and research organizations to transmit information, files, graphics, and etc.

Intranet- The implementation of Internet technologies within an organization, rather than for external connection to the global Internet (SurfCONTROL, 1996).

JPEG- Joint Photographic Experts Group or a type of graphic format recognizable by most web browser software.

Policy- For this paper, the term policy will be used to refer to written company instructions and will include the following topics: general management, human resources, environmental, business operations, facilities, engineering, services, quality assurance, business development, safety, materiel, security, information services, program management, and contracts.

Sector- The second level operating unit at Lockheed Martin Corporation.

Search engine- A web application that allows searching of a collected set of web pages by accessing a stored set of information and addresses (URL).

TCP/IP- A protocol on which all World-wide Web based networks run.

URL- Universal Resource Locator or address of a web page.

Web Page- A document that is viewed using a browser in which information and links to other web pages can be found.

Web Server- A computer which stores and provides access to web pages.

CHAPTER II
LITERATURE REVIEW

"When the Internet caught on, people weren't looking at it as a way to run their businesses," says Tom Richardson of Digital Equipment Corporation. "But that is in fact what's happening" (Cortese, 1996). Corporations are using Intranets for a wide variety of information dissemination applications. Policies and procedures, organization charts, directories, and even lunch menus are showing up on intranets. These types of networks provide employees with not only necessary information to do their jobs, but with news and other information of personal interest.

The first use of intranets was to move traditionally paper-based information online. This included competitive sales information, human resources, employee benefit statements, technical support, financial information, company newsletters, project management memorandums, and much more (Levitt, 1996). Recently, a survey conducted by Louis Harris & Associates of Bethesda, Md., showed that intranets are being used by companies for E-mail (68 percent), document sharing (55 percent), internal communications (45 percent), electronic forms distribution (38 percent), human resources posting (22 percent), and travel reservations (7 percent) (Sweat, 1996a).

In 1993, engineers working for The Boeing Company discovered an inexpensive way to use a network which allowed easy sharing of information. More than two years later, 20,000 users retrieve company information on an intranet called the Boeing Web. By year's end, at least 80 percent of Boeing's 96,000 employees will have access to the intranet. "Web servers allow us

to create a 'pull' information system, rather than pushing information out to employees, who could care less about certain items" (Moeller, 1996).

Technical librarians working at National Semiconductor Corp. began a company intranet with one web server providing information about the technical library to a few departments. By April 1995, they were getting 1,000 hits a day. Although the librarians admit it was hard work, they also said it was great fun (Holland and Picard, 1996). Intranets can be motivational and morale raisers. At Amdahl Corporation, the corporate library provides access to information from research firms on the intranet. In addition, reference material can be requested through the web by submitting a form. Job openings are also posted on their web page. Amdahl publishes a newsletter which contains links to PowerPoint presentations or sound files of speeches given by the President (Campbell, 1996).

Rockwell Aerospace, in Pico Rivera, California, uses their intranet for online access to schematics of components of the space shuttle. This application has eliminated less efficient ways of viewing the drawings. Chiron Corp., in Emery, California, disseminates a database of graphical images of molecular structures of company-created chemicals on their intranet. Benefits from this application have been tremendous because before the intranet, they did not have any database applications that could deal with graphical information on multiple platforms. In Fairfield, Connecticut, General Electric Co. (GE) provides the company's annual report and other business information that stock-holding employees can use to manage investments. Their plans include eventually linking 220,000 employees worldwide (Carr, 1996).

Employees at Compaq Computer Corp. can reallocate investments in their 401(k) plans through the company intranet. Before, employees had to either fill out a form or make a phone

call and talk to a service employee (Cortese, 1996). Visa International Inc. wants to reduce two million paper documents the banks collectively send daily by connecting 19,000 banks to an intranet. "This will forever change the way banks do business," says Cathy Basch of VisaVue Information Systems. Help in detecting fraud, tracking questionable transactions, completing business forms will all be accomplished through this intranet (Thyfault, 1996).

Engineers at Ford Motor Company designed the 1996 Taurus through an intranet, linking design centers in Asia, Europe, and the U.S. Another engineer at Semiconductor Corporation developed a web page that lets his department schedule meetings online (Cortese, 1996).

Two critical applications needed by Federal Express have been integrated into their intranet. First, publishing internal technology reports helps keep employees on top of project specifics, plans, and implementation procedures. Second, a help-desk support for internal staff streamlines customer support by Federal Express information systems (Netscape Communications Corporation, 1996). Oil exploration, by Mobil Corporation, is being enhanced by the use of a company intranet. Geophysicists, geologists, and reservoir engineers share knowledge on research, software, and daily operations status reports online (Netscape Communications Corporation, 1996b).

Newsgroups are another intranet application being used by many corporations. Electronic Arts is developing newsgroups on its intranet where teams can discuss projects via the network and review the history of discussions so that employees joining a project already in progress can get up to speed (Netscape Communications Corporation, 1996a). At US West, a new web page called the "rumor mill" allows employees to anonymously ask questions of senior executives about company scuttlebutt (Sprout, 1996).

Directories are published on the majority of intranets and are usually searchable. 3M provides access to an employee telephone book and E-mail addresses. "We see our intranet as a kind of yellow pages to all the divisional and business unit services," says Norm Hickel of 3M (Netscape Communications Corporation, 1996c).

When a company is geographically dispersed around the world, sales and service teams need to keep up on fast changing products and pricing information. Silicon Graphics' sales teams use the intranet to relay information about where they have been successful, and to find out hundreds of different product configurations (Netscape Communications Corporation, 1996h). Cadence Design Systems Inc. uses a web-based intranet system called OnTrack which maps each phase of the sales process with supporting materials and reference information. With OnTrack, sales reps now have a single unified tool that contains information needed from prospecting to closing a deal and account management (Campbell, 1996).

Cushman & Wakefield Inc. has developed a property-tracking Site Solutions database that includes all of the company's completed, under construction, or planned commercial real estate ventures. This intranet application uses an interface written with the software packages Visual Basic, Visual C, and Microsoft Access. "If a broker has clients in Los Angeles that want to know about a building in Washington D.C., this will make it a lot easier," says Tom Michelli of Cushman & Wakefield (Wilder, 1996).

A high-tech usage of the intranet is being implemented by Morgan Stanley, a securities sales company. The "hoot and holler" is Morgan Stanley's global intercom whereby traders and salespeople let colleagues know what they want to buy by speaking into a worldwide voice-messaging system. The message is then played on small computer speakers on the trading floor

for the relevant country. Previously, if the salesman left the floor at the wrong moment, then he would miss important news. Now, with hoot and holler, the message is digitized and stored as a voice message on a web server. After traders return to the floor, they can play the message on their computer from the intranet (Sprout, 1996).

Information dissemination to employees is a necessity and has been improved drastically in some companies by the use of an intranet. The intranet is still not suited for applications such as order processing or accounting, but in the fast-changing world of Internet technology, that may not be true for long (Cortese, 1996).

CHAPTER III
METHODOLOGY

Recently, the Lockheed Martin Corporation merged with Loral Corporation. The Loral units which now comprise part of Lockheed Martin are relatively new to the network. Because some of these companies are just beginning a presence on the network, they may not be at a point where it would be useful to analyze them. This content analysis focused on companies with a home page and policies already on the network. Each company's web page information was reviewed in random order based upon availability.

The number of corporate policies is currently increasing, so only those in effect as of December 2, 1996 were included in this study. One hundred and ten corporate policies were currently in effect and should have been implemented by each company. Company policies were examined by title only and then interpreted as covered by a corporate policy or not covered. A table of corporate policies was created and listed the title and the number of companies with similar policies and the number of companies without similar policies. These figures aided in making recommendations as to which policies needed further interpretation by the company and which could be adopted by the company as-is.

Individual companies are adding information to their web sites that is not only useful to their employees, but also to other Lockheed Martin operating unit employees. For example, an engineer at one company may need to know where he can have some parts gold plated. A search on the network of the products and services information may lead him to another Lockheed Martin company. This convenience helps companies supply work to other Lockheed Martin operating units.

Additional information found on company web pages was examined. Organization charts, company newsletters, financial information, products and services information, directories, library services and other miscellaneous data was reviewed at each site and was recorded in Table 3 as either being available or not being available. A discussion of the frequency of each type of information and updating requirements was included. This was followed by an examination of some major sites on the corporate web pages.

Employees accessing the Lockheed Martin Intranet use Netscape Navigator through a licensing agreement with Netscape Communications Corporation. This was the web browser used for analyzing the intranet.

CHAPTER IV
ANALYSIS OF DATA

Initially intended as a means of policy dissemination throughout a vast corporation, the Lockheed Martin Network is growing by leaps and bounds, adding new applications at an astonishing rate. The corporation is using its network to gather information that previously consumed volumes of paper and involved expensive mailing costs. The types of information available on the network as well as the many information gathering applications being implemented through the network are too numerous to study. The limitations set forth in the introduction of this paper considerably narrows the focus of what information has been explored by the researcher on the Lockheed Martin Network.

POLICIES

To help in understanding the following discussion, a brief description about corporate and company policies is needed. First, the company structure must be explained. There are three operating levels of Lockheed Martin: corporate, sector, and company. There is one corporate office, five sectors, and approximately eighty companies that made up Lockheed Martin Corporation at the time of this study. Policies have been written at the three different operating levels. There is a set of corporate policies, one hundred and ten, that are the highest level policies required to be followed by each company. The sector policies, or second level policies, were not studied as only a very few exist. Each company also has written their own unique set of policies. This study has recommended which corporate policies do not need to be re-written at the

company level.

The policy data that has been collected is presented in Table 1 and Table 2. Table 1 includes the results of the company and corporate policy comparison. Table 2 gives the researcher's recommendations which will be discussed later.

An important factor concerning policies and procedures is that government auditors are very concerned about current and accurate documentation. Employees of companies doing work for a government agency are required to work as defined by the most current policies and procedures. This is a key element of a government audit. Lockheed Martin corporate policies have been established as electronic, and a hard copy is for reference only. The current version is always the version on the Lockheed Martin Network. Each policy states this fact as part of the introduction. Government auditors have accepted this and have given approval to this form of documentation.

The difficulty in comparing corporate and company policies begins with the interpretation of what is policy. During the course of this research, it was determined that not less than eleven different terms were used to describe policy. These included the terms policies, procedures, guidelines, command media, instructions, directives, work instructions, standards, practices, statements, and standard practice instructions. Of these, policies did occur most frequently, yet all were used in describing documentation on similar material. For the remaining discussion in this paper, documents relating to the above terms will be referred to as policies.

Common to all companies is the fact that each policy is presented as one web page. This allows for ease of printing, and the search engine which is employed uses the title of each policy for keyword searching. Therefore, making each policy one web page allows more efficient search

capabilities. It was also found that some companies separated their policies into manuals of policies. For example, policies on Human Resources, Management, Engineering, General, and Finance may have been presented in a separate set of web pages. Conversely, other companies have combined all of their policies into one manual with only a section label similar to the above terms making the distinction. These sections may or may not include all of the topics that other companies have as individual manuals. Lastly, some companies have combined all policies with no distinction made between sections of policy. More interpretation, therefore, was needed to arrive at a common group of subjects for policy comparison. Policies with the following subjects was included in this examination: general management, human resources, environmental, business operations, facilities, engineering, services, quality assurance, business development, safety, materiel, information services, program management, and contracts. Again, interpretation was made by the researcher as to whether the policy should or should not be included in the research statistics by determining if the title appeared to fit one of the selected research topics.

The actual number count of policies a company has is not truly representative of the amount of policy information they have written (See Table 3). Some companies may include more information in one policy, or some may try to limit the length of a policy for reasons of handling, approval, or ease of reading. The total number of policies count given in Table 3 was only included to indicate a quantity of web pages that have been developed by the company.

The policies and procedures home page on the Lockheed Martin Network contained a listing of the five sectors of the corporation, all of which were hyperlinked. Each of these linked to a list of companies in the sector. It was determined that sixty-one companies were currently listed as those that intended to publish policies on the network. Of those, twenty-seven had an

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existing set of policies on the network. These twenty-seven sets of policies were used for the research statistics found in Table 1 and Table 2.

Policies to be adopted by a company, thus meaning that no similar company policy was written, required that the policy be sufficiently applicable to all employees regardless of the circumstances and/or work environment. Looking at the count of companies with similar policies and the count of companies without similar policies in Table 1 will give an idea as to how the researcher decided upon the recommendations in Table 2. If the policy had a high count for companies with similar policies, this would tend to imply that the corporate policy is either too general, or that it leaves much to the interpretation of the company, although this is not always the case. For example, the corporate policy covering sexual harassment had a high count of companies with similar policies. The corporate policy on this issue was clear and seemed to sufficiently cover all employees of the corporation. It was recommended that this policy be adopted by the companies as-is. Possibly, as an additional recommendation, this policy should only be referred to in another general company policy. This general policy may be a good location for referring to all corporate policies that are indeed sufficient as written by Lockheed Martin Corporate. The researcher has read all of the corporate policies which also helped in evaluating if a company should write their own policy on the subject matter.

If, in Table 1, the policy had a high count for companies without similar policies, this would tend to imply that the corporate policy is sufficient as-is, or that the policy is not related to the function of the company. For example, the Corporate Internal Audit policy had a high count for companies without a similar policy. The policy described the function of a corporate entity and therefore, did not need to be re-written. However, the policy Resolution of Employee

Disputes also had a high count in this category, yet it does tend to relate to the function of the company. This would imply that companies would need to write their own policy on this issue, yet it appears that currently companies had either adopted the corporate policy or had not published this policy on the network.

The recommendations in table 2 are just that, recommendations. Interpretation as discussed above did occur and many other factors may have altered the results. Until the review and examination was conducted, the factors associated with interpreting policies was not anticipated. After careful reading of the corporate policies and counting of similar company policies, the recommendations were made.

COMPANY INFORMATION ON THE NETWORK

Because moving from an internal network page to an external world wide web page was seemingly transparent to the intranet user, deciphering what is company proprietary and what is not was challenging. All the data collected in Table 3 was from internal network web pages. Many companies did have their own external world wide web pages, but for this study, only information on the intranet (The Lockheed Martin Network) was analyzed. This, after all, is the information published for the benefit of the employees.

It was determined that of the sixty-one companies listed as on the network, only seventeen currently were hyperlinked. These links take the user to the additional company information published on the network. Some other companies did have additional information, but only on external web pages. These companies were mainly commercial companies not doing work for the

government. The Loral companies that joined Lockheed Martin recently may not have had enough time to establish a presence on the network as of yet. The statistics presented in Table 3 were based solely on the seventeen companies with other information published on the network. Although seventeen may not be a high percentage of the total companies, the amount of information available on these companies' web pages was remarkable. The categories in Table 3 were selected because of the importance of the information to the employees and because of the knowledge by the researcher on these information materials. Much more information was available on the Lockheed Martin Network than what was presented in Table 3.

The home page, or the first page which invited the user to select different information published by the company, usually contained graphics, text, and hyperlinks. JPEG formatted graphics along with animated GIF files were predominantly featured on the home pages. Many times a photograph of the building was at the top of the home page. The majority of the home pages also featured a standard format, in that a link to all the available information the company publishes was included on the home page. In other words, the user did not need to link to another page to find more information links. Information may have been categorized and then linked to another web page of links, but the user could identify from the home page all information that was available from the company. Time spent to update a home page is minimal. Normally, only changes to URLs would be needed unless a complete new look is desired.

Products and services information reined supreme as the most common type of information, besides policies, published on company web pages. Sixteen of seventeen companies presented products and services information. In varying formats and approaches, this information was published in a kind of self-promotion of companies. One company went as far as providing

video clips and audio of results from some of their most important contracts. Other companies listed all of their products and services in menu format with a description of each just a click away. Of all the categories analyzed, graphics were used most heavily in the products and services information as this tends to add interest. As products and services change, the web pages will need updating. This can require a significant amount of time depending on how simple or extravagant the page is.

The second most common type of information published on the network was newsletters and organization charts. Twelve of seventeen companies published these in some format. Newsletters may have been referred to as newspapers, Ezines, or bulletins. They were available as readable online or as downloadable in different viewer formats. Some of the newsletters that were online included links to video clips, audio clips, and presentation files. The organization charts also were varied in their completeness and their format. Downloadable files that needed to be viewed in other software packages were available as well as online organization charts. The online organization charts most frequently were presented as graphics that had been scanned. One company had pictures of employees on the organization chart in JPEG format. Most of the organization charts presented only upper management. Updating organization charts is a constant function. This must be a consideration when the company first publishes an organization chart on the network.

Company financial information also was found on the majority of web pages. This included stock quotes and company earnings press releases. Ten of the seventeen companies provided some type of company financial information. Stock quotes usually were achieved through a link to an external world wide web information provider. The company earnings and

press releases could be found as part of newsletters, or as another hyperlink. Usually graphics accompanied the text in JPEG format. These types of pages require updating with each new press release. This may not be too difficult if the press release is already available in electronic format as conversion to HTML requires little time and effort.

Directories of two types were found to be available. Nine of seventeen companies provided either an Email address directory or a telephone directory or both. Twelve total directories were found. Of these, nine directories were searchable by employee name. Three of these directories allowed for a search by department. The searching capabilities allowed a listing of employee's telephone numbers by department to be generated and if needed, printed out. Generating a specially tailored telephone or Email address list to meet the needs of employees is a great benefit.

The last category besides miscellaneous information and the least published of all, was library information. Although only three of the seventeen companies had web pages with library services information, the web pages that did exist were well thought out and provided an abundance of information. Inter-library loan information was available at all three of the library web sites. The libraries were not interacting with each other, but they did have connections with a local inter-library loan program. Access to an online catalog was available from one of the libraries on the network. If an employee finds material that is needed, then the library will loan the material to his or her company. This in turn is a type of inter-library loan program.

Check-out information, new acquisitions, and available services were also included on the library pages. The new acquisitions listings offered employees up-to-date information on new books, periodicals, and CD-ROMs. At each library, online searching services were available. The

information vendors were listed and costs per search were detailed.

The low number of library web pages can be attributed to several factors. Not all companies have their own technical library staffed by special librarians. If they do, they are probably not heavily staffed and the time required to publish web pages may not be available to the librarians. Library web pages on an intranet offer great exposure for the library to the company employees and management.

The web page contents discussed until now have concerned information that is needed on a daily basis by employees to do their jobs. But, to get a better idea of the various types of information that can be published on web pages, an additional miscellaneous category was included. Other additional information, or miscellaneous as found in Table 3, ranged from online help, to weather information, to employment opportunities. These additional sources of information were found to be greatly varied and professionally presented. To find what additional information a company offers, see Table 3.

A major use of the Lockheed Martin Network is for publishing manuals of all types. Engineering, web technology, software, training, online help, and business development are just a few of the online manuals that were discovered. These online manuals provide a paper cost savings and a major benefit in the ease of updating. Because the manuals are available on the network, other companies can "borrow" the entire manual or revise them to reflect unique needs of the company. Having access to something already written and formatted can be a huge time savings.

Employment opportunities information within the company was available to employees on the network. Resumes could be Emailed to the human resources department if an employee is

interested in a job opening. Until now, posting on bulletin boards was the only means of finding information about job openings. Now, information is available at the employee's desktop. Other human resources information, such as benefits, medical forms, and continuing education can also be found on the network.

Information that can make the employee's job more enjoyable seemed to be popular on the intranet web pages as well. Weather reports and forecasts were found along with cafeteria menus and photographs of company picnics and employee retirement parties. The weather reports were graphical and supplied by an external world wide web application similar to the stock quotes as discussed earlier. Employee programs, like health and fitness and child day care were described on Missiles and Space's web pages. A photograph of a company sponsored fitness club was also displayed.

CORPORATE INFORMATION ON THE NETWORK

The corporate authored web pages on the Lockheed Martin Network contained all the types of information analyzed in the company web pages and more. Directories, organization charts, news, financial information, products and services information were available on the corporate web pages. This section of the paper discusses some of the major benefits and uses of the corporate web pages.

One major program that is being aided by the Lockheed Martin Network is the Company Compliance Training Program. This is a corporate sponsored program that involves training plans which must be developed by each company and submitted through a forms application on

the network. Each company could enter their training program plans through the use of web forms. After the plan data was entered, it could be retrieved and edited. When the plan was ready for approval, a submit button was clicked and the information was sent to a responsible executive for review. Previously, paper copies were sent or faxed back and forth. The plans are now completely paperless and only the electronic version is considered to be accurate.

Because of the enormous amount of web pages on the network, the corporate office has implemented its own search engine for intranet searching only. A top-level search could be conducted on all or a part of the network. This search engine was researched and implemented by a division of Lockheed Martin that is a full-service World Wide Web company. This company maintains the network and oversees the layout of the intranet. They also provide support and technical information on software, hardware, and network problems to the entire corporation.

There are many other useful corporate web pages. A section of the corporate pages was devoted to employee communications. These pages contained corporate bulletins and some online subscription publications paid for by the corporation. Another set of web pages included code of conduct and business ethics information. Further, other pages presented upcoming network sites and what's new. All of these pages aid the employee in finding critical information to help them do their jobs.

CHAPTER V
SUMMARY AND CONCLUSIONS

As has clearly been shown by this research, the amount of information available on the Lockheed Martin Network is astounding. Lockheed Martin Corporation has realized a number of subjective benefits from moving policies and other types of company information on to its intranet. Configuration control, once a challenge under the combined mainframe and paper system, is now streamlined with a single document. Users have confidence in the integrity of the information and developers of policies and procedures can make one update that has an immediate, corporate-wide impact.

During the course of interpreting and evaluating corporate and company policies, two points became clear. One being that it is very difficult to determine if a company will need to write their own policies by examining only the titles. The researcher did read all of the corporate policies which helped in determining if they were needed at the company level. The second point is that the majority of policies at the corporate level need clarified in a company policy. With the many corporate policies that have been written, it was previously thought that most of these policies would be suitable for use by the company without further written instructions. Just the opposite has been discovered. Of the 110 policies and procedures, only forty have been recommended for use as-is. Of these forty, some still may require a company to write their own procedures because of some unique local requirements. The recommendations made in Table 2 are based on the researcher reading the corporate policies and by analyzing the counts in Table 1.

Another recommendation for each company is that a general policy be written. The general policy should refer employees to all corporate policies that are adopted by the company.

This would aid employees by having one location to find all important corporate policies.

Finding and locating information on the corporate intranet is not difficult because of the well laid-out format of the home page. This paper, Table 3 in particular, will serve as guide to the inexperienced network user in finding other company information. Table 3 lists the companies by name and shows what type of information they provide on their web pages. Therefore, the employee can simply go to the company link from the home page to find the related information.

Although the data in the tables is subject to change and will need updating soon, the research can also aid employees who are involved in actual company web page publishing and development. By seeing and investigating what other companies are doing with web technology, employees can begin to improve and add to their web pages.

Surprising results of this research has shown that the most popular type of company information on the intranet besides policies and procedures was products and services information. This information commonly found on external world wide web pages was also found on the intranet. Companies are using the intranet as a means of exposure to the entire corporation. Because of the large size of Lockheed Martin Corporation, having pages dedicated to the capabilities and services of the company can lead to increased work and a decrease in the amount of work that gets contracted out to other places. The recent mergers of the corporation also have meant that many of the companies are new and their products and services are not well-known throughout the corporation. This may explain the popularity of products and services information on the intranet.

Newsletters, organization charts, and directories also have found a place on the intranet pages. A need to improve dissemination has been identified because of the constantly changing

nature of these types of information. The requirement to distribute hundreds of paper copies has been eliminated thus saving time and money. The benefits of timely and accurate information dissemination have been achieved through the Lockheed Martin Network.

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Appendix A

TABLE 1- Data on Policy Content

Policy Title	Companies with similar policy	Companies without similar policy
Ethics and Business Conduct	23	4
Quality and Mission Success	7	20
Non-Discrimination - Equal Employment Opportunity	24	3
Political Activity	16	11
Conduct of International Business	6	21
Intellectual Property	18	9
Personal Use of Lockheed Martin Assets	21	6
Gifts, Gratuities, and Other Business Courtesies	21	6
Policies and Procedures	23	4
Internal Control	5	22
Crisis Management	8	19
Corporate Internal Audit	0	27
Management of Research and Development	15	12
Environment, Safety and Health	14	13
Review and Approval of Proposals and Other Contract-Related Transactions	12	15
Make or Buy	21	6
Financial Exposure	7	20
Engineering Excellence	8	19
Technical Reviews	10	17
Safety of Products and Services	21	6
Strategic and Long Range Planning	11	16
Governance of Entities	4	23
Approval of Business Ventures	5	22
Organizational Conflict of Interest	2	25
Computing, Telecommunications and Information Resources	10	17
Corporate Business Development-Related Association Memberships and Activities	2	25
Funding of Corporate-Sponsored Independent Research and Development Projects	0	27
Small Business Development Program	20	7
Corporate Aircraft	0	27

Data on Policy Content CONT.

Policy Title	Companies with similar policy	Companies without similar policy
Corporate Records Management	0	27
Disposition of Surplus Fixed Assets	4	23
Corporate-wide Procurement and Materiel Management	0	27
Release of Information	21	6
Corporate Nomenclature-Logotype Identification/Usage	2	25
Employee Communications	4	23
Contributions	7	20
Advertising	19	8
Participation in Domestic Trade Shows	3	24
Support for Think Tanks and Research Institutions	0	27
Insurance - Risk Management	10	17
Foreign Currency Transactions	4	23
Trade Credit Management and Charges to Bad Debts	0	27
Making Loans, Co-Signing Loans and Financial Guarantees	5	22
Corporate Guarantees, Letters of Credit and Surety Bonds	6	21
Investment Evaluation	10	17
Derivatives Management	5	22
Lien and Sale and Leaseback Transactions	13	14
Customer Financing Activities	21	6
Intra-Lockheed Martin Transactions	5	22
Business Travel	25	2
Control of Accounting Operations	23	4
Corporate Real Estate	10	17
Past Performance	5	22
Configuration Management	20	7
Data Management	19	8
Offset/Countertrade Commitments to Foreign Governments	3	24
Property Management	19	8
Classification of Independent Research and Development Costs-Government Contracts	3	24

Data on Policy Content CONT.

Policy Title	Companies with similar policy	Companies without similar policy
Compensation of Salaried Employees	12	15
Requests for Corporate Salary Board Action	0	27
Shift Premium	10	17
Notification Regarding Changes in Employee Benefits	2	25
Hours of Work	17	10
Holidays	18	9
Vacations - Salaried Employees	20	7
Employment of Former Military Personnel and Federal Government Employees	5	22
Rehire of Retired Salaried Personnel for Less than Full-time Employment	7	20
Smoke Free Environment	17	10
Severance Payments	17	10
Retirement Counseling	2	25
Mandatory Retirement - Elected Officers of Lockheed Martin Corporation	0	27
Absence from Work - Salaried Employees	22	5
Family and Medical Leave	22	5
Leaves of Absence for Union Officials	7	20
Transfer of Employees - Domestic Assignment	10	17
Transfer of Employees - Nondomestic Location	9	18
Temporary Assignments - Domestic	12	15
Substance Abuse	19	8
Support of National Management Association Chapters and Certified Manager Program	0	27
Employee Service Awards	21	6
Leadership Development and Succession Planning	20	7
The Lockheed Martin Corporation Educational Assistance Plan	19	8
Employee Education, Training and Development	16	11
College and University Relations	4	23
Lockheed Martin Institutes	0	27
Collective Bargaining Agreements	7	20

Data on Policy Content CONT.

Policy Title	Companies with similar policy	Companies without similar policy
Arbitration, National Labor Relations Board (NLRB) Charges & Complaints, Court Cases Involving Represented Employees or Unions and Organizing Activity	2	25
Strike Plan	7	20
Resolution of Employee Disputes	4	23
Prohibition Against Harassment	22	5
Security	21	6
Arming of Plant Protection Officers	7	20
Export Licensing and Compliance	18	9
Import Controls and Compliance	17	10
Participation in International Air Shows and Major International Exhibitions	6	21
Performance of Legal Activities	16	11
Domestic Business Development Consultants	18	9
International Consultants	19	8
Government and Competitor Information	5	22
Protection of Sensitive Data	19	8
Conflict of Interest	21	6
Compliance with the Anti-Kickback Act of 1986	21	6
Voluntary Disclosure	18	9
Compliance with the Antitrust Laws	17	10
Compliance with United States Securities Laws	11	16
Securities and Business Transactions	21	6
Hiring or Using Debarred or Suspended Individuals or Entities	19	8
Use of Debarred and Suspended Individuals or Entities in the Performance of Government Contracts and Subcontracts	19	8
Compliance with United States Antiboycott Laws	9	18
Compliance with the Foreign Corrupt Practices Act	19	8

Appendix B

TABLE 2- Policy Recommendations

Policy Title	Recommend Adopt as-is	Recommend company interpretation
Ethics and Business Conduct	X	
Quality and Mission Success		X
Non-Discrimination - Equal Employment Opportunity	X	
Political Activity		X
Conduct of International Business		X
Intellectual Property		X
Personal Use of Lockheed Martin Assets	X	
Gifts, Gratuities, and Other Business Courtesies		X
Policies and Procedures		X
Internal Control		X
Crisis Management		X
Corporate Internal Audit	X	
Management of Research and Development		X
Environment, Safety and Health		X
Review and Approval of Proposals and Other Contract-Related Transactions		X
Make or Buy		X
Financial Exposure		X
Engineering Excellence	X	
Technical Reviews		X
Safety of Products and Services		X
Strategic and Long Range Planning		X
Governance of Entities	X	
Approval of Business Ventures	X	
Organizational Conflict of Interest	X	
Computing, Telecommunications and Information Resources		X
Corporate Business Development-Related Association Memberships and Activities	X	
Funding of Corporate-Sponsored Independent Research and Development Projects	X	
Small Business Development Program		X
Corporate Aircraft	X	
Corporate Records Management	X	

Policy Recommendations CONT.

Policy Title	Recommend Adopt as-is	Recommend company interpretation
Disposition of Surplus Fixed Assets		X
Corporate-wide Procurement and Materiel Management		X
Release of Information		X
Corporate Nomenclature-Logotype Identification/Usage	X	
Employee Communications		X
Contributions		X
Advertising		X
Participation in Domestic Trade Shows	X	
Support for Think Tanks and Research Institutions	X	
Insurance - Risk Management		X
Foreign Currency Transactions		X
Trade Credit Management and Charges to Bad Debts	X	
Making Loans, Co-Signing Loans and Financial Guarantees		X
Corporate Guarantees, Letters of Credit and Surety Bonds	X	
Investment Evaluation		X
Derivatives Management		X
Lien and Sale and Leaseback Transactions		X
Customer Financing Activities		X
Intra-Lockheed Martin Transactions	X	
Business Travel		X
Control of Accounting Operations		X
Corporate Real Estate	X	
Past Performance		X
Configuration Management		X
Data Management		X
Offset/Countertrade Commitments to Foreign Governments		X
Property Management		X
Classification of Independent Research and Development Costs-Government Contracts		X
Compensation of Salaried Employees		X
Requests for Corporate Salary Board Action	X	

Policy Recommendations CONT.

Policy Title	Recommend Adopt as-is	Recommend company interpretation
Shift Premium		X
Notification Regarding Changes in Employee Benefits		X
Hours of Work		X
Holidays		X
Vacations - Salaried Employees		X
Employment of Former Military Personnel and Federal Government Employees		X
Rehire of Retired Salaried Personnel for Less than Full-time Employment		X
Smoke Free Environment	X	
Severance Payments	X	
Retirement Counseling	X	
Mandatory Retirement - Elected Officers of Lockheed Martin Corporation	X	
Absence from Work - Salaried Employees		X
Family and Medical Leave		X
Leaves of Absence for Union Officials		X
Transfer of Employees - Domestic Assignment		X
Transfer of Employees - Nondomestic Location		X
Temporary Assignments - Domestic		X
Substance Abuse	X	
Support of National Management Association Chapters and Certified Manager Program	X	
Employee Service Awards	X	
Leadership Development and Succession Planning	X	
The Lockheed Martin Corporation Educational Assistance Plan	X	
Employee Education, Training and Development		X
College and University Relations	X	
Lockheed Martin Institutes	X	
Collective Bargaining Agreements		X
Arbitration, National Labor Relations Board (NLRB) Charges & Complaints, Court Cases Involving Represented Employees or Unions and Organizing Activity		X
Strike Plan		X

Policy Recommendations CONT.

Policy Title	Recommend Adopt as-is	Recommend company interpretation
Resolution of Employee Disputes		X
Prohibition Against Harassment	X	
Security		X
Arming of Plant Protection Officers		X
Export Licensing and Compliance		X
Import Controls and Compliance		X
Participation in International Air Shows and Major International Exhibitions	X	
Performance of Legal Activities		X
Domestic Business Development Consultants		X
International Consultants		X
Government and Competitor Information		X
Protection of Sensitive Data		X
Conflict of Interest		X
Compliance with the Anti-Kickback Act of 1986	X	
Voluntary Disclosure		X
Compliance with the Antitrust Laws	X	
Compliance with United States Securities Laws	X	
Securities and Business Transactions		X
Hiring or Using Debarred or Suspended Individuals or Entities	X	
Use of Debarred and Suspended Individuals or Entities in the Performance of Government Contracts and Subcontracts	X	
Compliance with United States Antiboycott Laws	X	
Compliance with the Foreign Corrupt Practices Act	X	

Appendix C

TABLE 3- Company Web Page Information

Companies	# of policies	Date Searched	Newsletter	Financial	Org Charts	Products and Serv.	Phone Directory	Library	Miscellaneous
Aeronautics sector									
Aerostructures	268	02/05/97	-	-	-	-	-	-	-
Aeronautical Systems	130	02/05/97	n	n	y	n	y	n	Online support, weather info, HTML info.
Aeronautics International (Aircraft Services)	281	02/05/97	-	-	-	-	-	-	-
Aircraft Center	0	-	-	-	-	-	-	-	-
Logistics Management	98	02/05/97	-	-	-	-	-	-	-
Skunk Works	56	02/05/97	n	y	n	y	n	n	job info, gift store, photo archive
Tactical Aircraft Systems	419	02/07/97	y	y	y	y	y	n	info, help, software
c3i and systems integration sector									
Air Traffic Management	0	-	-	-	-	-	-	-	-
Command & Control Systems	116	02/07/97	-	-	-	-	-	-	-
Electro-Optical Systems	98	02/07/97	-	-	-	-	-	-	-
Fairchild Defense Systems	0	-	-	-	-	-	-	-	-
Federal Systems Group	0	-	-	-	-	-	-	-	-
C2 Integration Systems	0	-	-	-	-	-	-	-	-
Federal Systems - Gaithersburg	0	-	-	-	-	-	-	-	-
Federal Systems - Owego	0	-	-	-	-	-	-	-	-
Information Systems	82	02/07/97	y	y	y	y	y	n	manuals, forms, travel info, cafeteria menu, web info, presentations.
IR Imaging Systems	64	02/07/97	-	-	-	-	-	-	-
Lockheed Martin Canada, Inc.	0	02/07/97	n	y	n	y	y	n	press releases
Electronic Systems Canada	0	-	-	-	-	-	-	-	-
Management & Data Systems	144	02/08/97	y	y	y	y	n	n	benefit info, job info, computer support, training info
Tactical Defense Systems - AZ	0	-	-	-	-	-	-	-	-
Tactical Defense Systems - MN	79	02/08/97	-	-	-	-	-	-	-
Tactical Defense Systems - OH	0	-	-	-	-	-	-	-	-
Western Development Laboratories	0	02/08/97	n	n	n	y	n	n	manuals
Electronics sector									
Aeronutronic	0	-	-	-	-	-	-	-	-

Company Web Page Information CONT.

Companies	# of policies	Date Searched	Newsletter	Financial	Org Charts	Products and Serv.	Phone Directory	Library	Miscellaneous
Control Systems	107	02/08/97	y	n	y	y	n	n	Engineering manuals, training info, help, Web info, vendor info, software info, job info.
Electronics & Missiles (Click on the selected site):	0	-	-	-	-	-	-	-	-
Orlando	255	02/08/97	y	y	y	y	y	n	Job info, manuals, map, training info, forms, clubs and recreation
Ocala	174	02/08/97	-	-	-	-	-	-	-
Pike County	255	02/08/97	-	-	-	-	-	-	-
Federal Systems - Manassas	0	-	-	-	-	-	-	-	-
Government Electronic Systems	297	02/08/97	y	n	y	y	y	n	Job info, map, help, manuals, computer info.
Ocean Radar & Sensor Systems	130	02/12/97	n	n	n	y	n	n	continuing education info, map, weather info, software tools, manuals
Sanders	201	02/12/97	-	-	-	-	-	-	-
Tactical Defense Systems - Great Neck	0	-	-	-	-	-	-	-	-
Vought Systems	0	-	-	-	-	-	-	-	-
Information and Services Sector									
Commercial Systems Group	0	-	-	-	-	-	-	-	External pages for each company
Access Graphics	0	-	-	-	-	-	-	-	-
Commercial Electronics	0	-	-	-	-	-	-	-	-
Formtek	0	-	-	-	-	-	-	-	-
Integrated Business Solutions	0	-	-	-	-	-	-	-	-
MountainGate	0	-	-	-	-	-	-	-	-
Real 3D	0	-	-	-	-	-	-	-	-
Communications Systems	0	02/12/97	y	n	y	y	y	n	medical info, security, benefit info, job info, training info, map

Company Web Page Information CONT.

Companies	# of policies	Date Searched	Newsletter	Financial	Org Charts	Products and Serv.	Phone Directory	Library	Miscellaneous
Enterprise Information Systems	34	02/12/97	y	y	y	y	y	y	Webserv (www full service company), software, job info, benefits, training info, manuals, presentations, vendor info
IMS	0	-	-	-	-	-	-	-	-
Information Systems Center	0	-	-	-	-	-	-	-	-
Products Group	0	-	-	-	-	-	-	-	-
Advanced Recorders	0	-	-	-	-	-	-	-	-
Conic	0	-	-	-	-	-	-	-	-
Microcom	0	-	-	-	-	-	-	-	-
Display Systems	0	-	-	-	-	-	-	-	-
Hycor	0	-	-	-	-	-	-	-	-
Microwave Group	0	-	-	-	-	-	-	-	-
Microwave - Narda	0	-	-	-	-	-	-	-	-
Microwave - Narda West	0	-	-	-	-	-	-	-	-
Randtron	0	-	-	-	-	-	-	-	-
Telemetry & Instrumentation	0	-	-	-	-	-	-	-	-
Services Group	94	02/12/97	y	y	n	y	n	n	map, weather info, resume inventory system, email directory, job info
Space Mission Systems & Services	0	-	-	-	-	-	-	-	-
Systems Support & Training Services	0	-	-	-	-	-	-	-	-
Technical Operations	379	02/12/97	-	-	-	-	-	-	-
Wideband Systems	97	02/12/97	-	-	-	-	-	-	-
Space and Strategic Missiles Sector									
Astronautics (Click on the selected site):	0	-	-	-	-	-	-	-	-
Denver - Astronautics	383	02/12/97	y	y	y	y	y	y	Powerpoint Presentations, maps, job information, manuals
Launch Operations - includes Cape Canaveral and Vandenberg	815	02/12/97	-	-	-	-	-	-	-
Manned Space Systems	386	02/12/97	-	-	-	-	-	-	-

Company Web Page Information CONT.

Companies	# of policies	Date Searched	Newsletter	Financial	Org Charts	Products and Serv.	Phone Directory	Library	Miscellaneous
Missiles & Space (Click on the selected site):	0	02/12/97	y	y	y	y	n	y	press releases, job info., photos, video clips, manuals, employee programs
East Windsor/Valley Forge	193	02/12/97	-	-	-	-	-	-	-
Sunnyvale	636	02/12/97	-	-	-	-	-	-	-
Telecommunications	0	02/12/97	y	n	y	y	n	n	benefits, job info